


IN THE ABSTRACT:

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Abstract

 A bi-directional optical transmission system according to the present invention provides transport of x optical channels over n nodes. The system supports two-way transport of the x channels over a single fiber connecting each of the nodes in sequence. The system is advantageous in that only two optical transmission bands are utilized in order to achieve minimal loss in the separation of bands. The use of only two bands permits the utilization of low-loss wide band thin film optical filters to combine and separate the signals at each node. A reflection port of this filter is used to carry oppositely directed signals of the second band from the bi-directional fiber to an optical amplifier for the second band. An alternate arrangement of the optical filters in the two separate bands is chosen to maximize the optical performance of the overall system and significantly reduce insertion losses.